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A NEW METHOD OF TREATING GRAIN BY THE JENSEN PROCESS
FOR THE PREVENTION OF SMUT.

By B. T. GALLOWAY.

During the past year Mr. Elam Bartholomew, of Rockport, Kans., a special agent of the Division, made some interesting experiments in the treatment of oat smut by the Jensen or hot-water process. Among other things, Mr. Bartholomew devised a method for treating large quantities of grain without resorting to the tedious basket-dipping process. The latter, he says, will answer fairly well for a few bushels of grain, but where a large acreage is to be planted the labor involved and the general inconvenience of the work will prevent many farmers from adopting the method. Mr. Bartholomew's method of treating 5 bushels of grain at a time was essentially as follows:

A common kerosene barrel was procured and after removing the head a $1\frac{1}{2}$ -inch hole was bored in the bottom close to the rim. The hole was then covered with a piece of wire window screen, the latter being tacked to the bottom of the barrel on the inside. A pine plug was then fitted to the hole from the outside in such a way that the end barely reached the fine wire screening. After making these preparations the barrel was placed on a box high enough to allow a pail or tub to be slipped under the bung. An old well bucket, such as are used in bored wells, was then obtained, and after removing the bottom, four rows of half-inch holes, running the entire length of the bucket, were punched. The holes were punched, as nearly as possible the same distance apart, six being placed in a row, making twenty-four in all. After punching the holes the bucket was placed in the center of the barrel, bottom end up, and resting on its bail, thereby raising it 4 or 5 inches from the bottom of the barrel and causing it to project a little above the top of the latter.

Holding the bucket in position, 5 bushels of badly smutted oats were emptied into the barrel. There were already on hand a common wash boiler and an iron pot filled with water which had been heated to boiling point on the cook stove. The contents of the two vessels were cooled to 130° F. by the addition of cold water, thereby increasing the quantity of liquid to 15 gallons. This was then poured into the bucket in the center of the barrel until all the grain was covered. The floating grain was pushed under with the hand and the barrel covered with a cloth to hold in the heat. After standing ten minutes the water was drawn off through the hole at the bottom of the barrel, the temperature in the meantime having fallen to 100° F. More boiling water was added to the water drawn off, until the temperature reached 133° F., when the liquid was again poured into the barrel and allowed to stand ten minutes, as before. Again the drawing off and heating process was repeated, the water being poured back into the barrel and allowed to

stand ten minutes. It was then drawn off for the last time and a new lot of grain put in and treated as in the first case.

Mr. Bartholomew says that seed treated in this way yielded less than one-tenth of 1 per cent of smutted oats, while in fields where no treatments were made 20 per cent of the grain is often affected with the fungus. A piece of 6-inch stovepipe, it is thought, will answer the same purpose as the bucket. The pipe should be arranged so that it will stand at least 4 inches above the bottom of the barrel.

FIELD NOTES, 1892.

By ERWIN F. SMITH.

[Plate XXXVIII.]

A NEW MELON DISEASE.

A widespread disease of muskmelon leaves was observed in southwestern Michigan in September. The foliage was destroyed almost completely over whole fields and the fruits failed to ripen. The symptoms suggested the work of a *Peronospora*, but an *Alternaria* or *Macrosporium*, supposed at first to be a saprophyte, was the only fungus found. Owing to the economic importance of this disease it will be made the subject of a special paper, the fungus having since been studied in the laboratory and the disease reproduced in the field by pure cultures made from single spores.

GRAPE POWDERY MILDEW.*

The powdery mildew of the grape was abundant on many varieties in an experimental vineyard at South Haven, Mich. The perithecia were well developed and numerous on September 19, although there had been no cold weather or frosts. This is opposed to Viala's hypothesis, that severe frosts are necessary for the formation of the perithecia.†

APPLE SCAB.‡

Apple scab was exceedingly severe in western New York and central and southwestern Michigan. There was an almost total absence of

* *Uncinula spiralis* B. & C.

† Les périthèces sont relativement rares en Amérique; ils ne se produisent jamais qu'à la fin de l'automne lorsque les grands froids brusques surviennent et cela seulement dans les régions du Nord; ils sont surtout fréquents dans la Nouvelle-Angleterre. Dans Missouri, le Texas, la Californie, on ne les observe presque jamais; ils sont rares dans la Virginie. Il semblerait donc que les froids rigoureux arrivant brusquement soient nécessaires à leur formation.—*Une Mission Viticole en Amérique*, p. 283.

‡ *Fusicladium dendriticum* Fkl.